

A NEW SPECIES OF *TETRASTICHUS* HALIDAY 1843
(HYMENOPTERA : EULOPHIDAE) FROM HIGH ALTITUDE
OF INDIA¹

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(With thirteen text-figures)

Genus *Tetrastichus* Haliday 1843

Genotype : *Cirrospilus attatus* Walker, by original designation [miser (Nees)].

Tetrastichus Haliday, 1843, Trans. Ent. Soc. London, Vol. 3, p. 297-298 (Type, *Cirrospilus attatus* Walker).

Tetrastichus Kurdjumov, 1913, Russ. Ent. Obozr (Rev. Russe Ent.). Vol. 13, p. 253, (Type, *Cirrospilus attatus* Walker).

Tetrastichus Gahan, 1914, Proc. U.S. Nat. Mus., Vol. 48, p. 166, (Type, *Cirrospilus attatus* Walker).

Tetrastichus Haliday is one of the most easily recognizable genus of the family Eulophidae. The genus has been revised by Burks (1943) proposing stable generic characters. In addition, some new generic characters have also been proposed, which will further facilitate the identification of this genus, viz. (i) sub-genital plate with anterior margin concave in the middle, the central notch of its posterior margin with laterally directed ridges (ii) first valvifers semicircular, (iii) third valvulae moderate size, movably articulated with second valvifers, and (iv) outerplates of ovipositor with a ridge along basal half of dorsal margin and another ridge starting at base of dorsal margin and running obliquely upto middle of plate.

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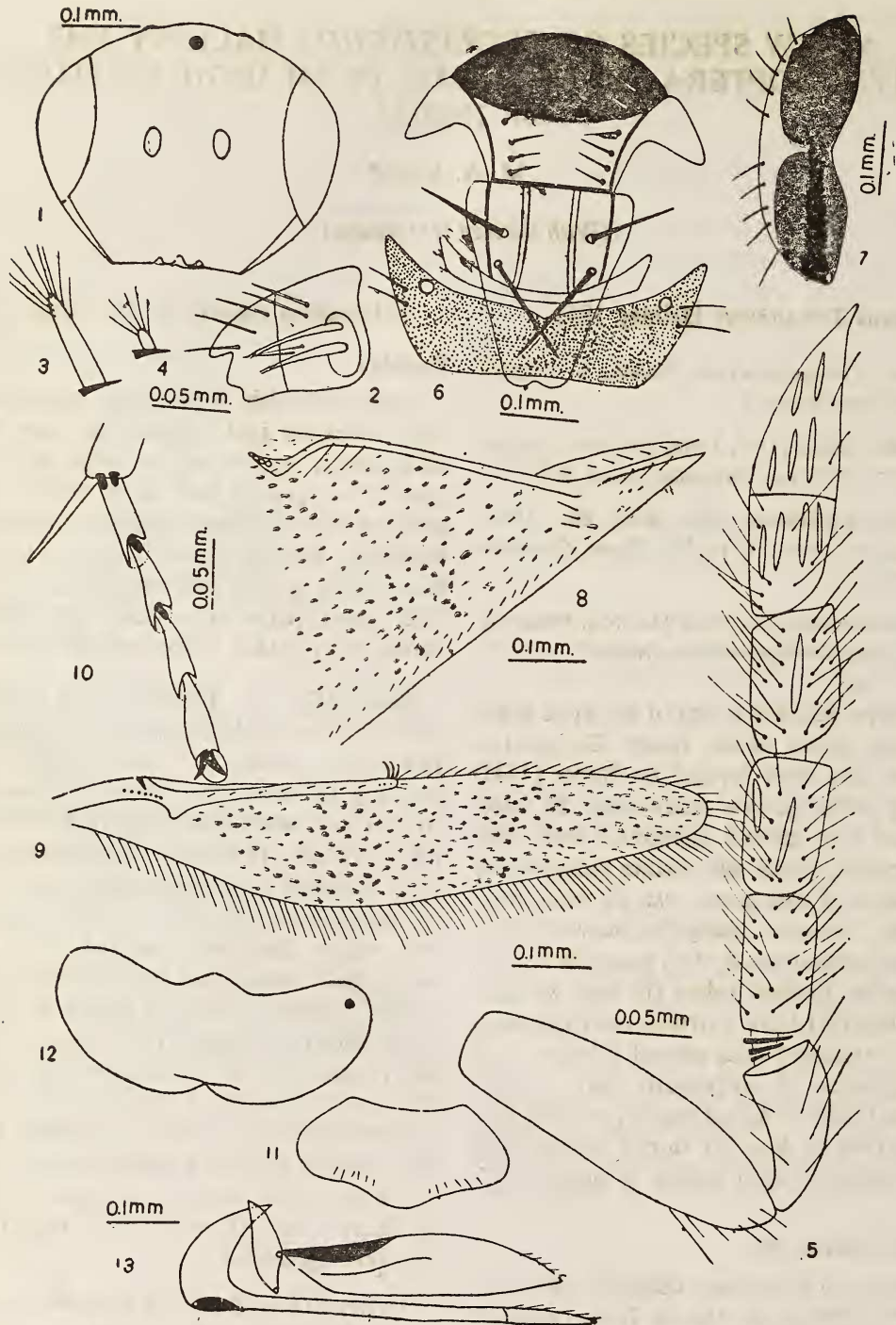
Tetrastichus atomelli sp. nov. (Figs. 1-13)

Female :

Head yellowish with some infuscation on face, antennae light brown with scape yellowish ; thorax golden yellow with dark brown patches on greater part of pronotum and on anterior part of scutum, margins of scutum and scutellum blackish brown ; propodeum dark brown with golden reflections ; legs yellowish with some parts infuscated ; abdomen light brown with golden reflections on dorsum.

Head : (Fig. 1) : Yellowish with some infuscation on face, wider than long in frontal aspect (0.4 : 0.31), width of frons (0.24) between eyes slightly more than one half of head width, frontovertex wider than long (0.3 : 0.18), ocelli red, arranged in obtuse angle triangle, basal ocelli removed from eye rim by three diameter of an ocellus and from occipital margin by one ocellar diameter, eyes red, short, bare ; malar space longer than the transverse diameter of eye ; antennae inserted nearly in centre of frons, antennal sockets two times as high as wide, separated by three times the diameter of a socket, distance between antennal sockets and eye slightly more than the distance between two antennal sockets, subocular suture distinct, mandibles tridentate with red apices (Fig. 2), maxillary (Fig. 3) and labial palpi (Fig. 4) each one segmented.

Antennae (Fig. 5) : Light brownish with scape yellowish, setose ; scape slightly flattened, more than three times longer than wide (0.22 : 0.07) ;



Figs. 1-13. *Tetrastichus atomelli* sp. nov. ♀ 1. Head facial view; 2. Mandible; 3. Maxillary palp; 4. Labial palp; 5. Antenna; 6. Thorax, dorsal aspect; 7. Pronotum; 8. Part of fore wing; 9. Hind wing; 10. Part of middle leg; 11. Eighth tergum; 12. Subgenital plate; 13. Ovipositor,

pedicel long more than twice as long as wide (0.11 : 0.05), distinctly longer than first funicle segment, funicle with three ring segments, funicle segments longer than wide, first and second funicle segments subequal in size (0.08 : 0.05), 3rd funicle segment slightly larger in size (0.09 : 0.055); club two segmented, more than three times longer than wide (0.17 : 0.055) longer than preceding two funicle segments combined.

Thorax: (Fig. 6): Golden yellow with dark brown patches on greater part of pronotum and on anterior part of scutum, margins of scutum and scutellum blackish brown; propodeum dark brown with golden reflections; posterior margin of the pronotum (Fig. 7) with ten strong setae; scutum wider than long (0.27 : 0.15) with six pairs of adnotaular bristles; scutellum (0.21 : 0.13) shorter than scutum, with two longitudinal dorsal grooves, two pair of scutellar bristles present; metanotum narrow, band like, propodeum with reticulate sculpture, mesal length of propodeum distinctly less than one third as long as scutum, propodael spiracles contiguous with anterior margin; mesopostphragma notched in the middle and extended beyond the expanded portion of the propodeum.

Fore wings (Fig. 8): Hyaline, more than twice as long as wide; costal cell narrow with six setae; submarginal vein with five strong setae; postmarginal vein absent; stigmal vein less than $\frac{1}{3}$ as long as marginal vein; marginal fringe long, spaced by a distance equal to almost one-fourth length of a fringe.

Hind wings (Fig. 9): Hyaline, more than five times longer than wide, submarginal vein with one strong setae; marginal vein with three curved hooklets, marginal fringes long, spaced by a distance almost one-sixth length of a fringe.

Fore legs: Yellowish except basal half of coxae, second and third tarsal segments infus-

ated; coxae with a cluster of setae on outer face of basal half and four long, strong setae on outer rim on distal half, femora compressed.

Middle legs: Uniformly yellowish with coxae, trochanter, dorsal margin of femora and last tarsal segment infuscated; outer rim on distal half of the coxae with two strong setae; tibial spur longer than basitarsus (Fig. 10), apical rim of tibiae, basitarsus and second tarsal segment with 2, 1 and 1 leg respectively.

Hind legs: Yellowish except coxae, trochanter, basal half of femora and last tarsal segment brownish; tibial spur shorter than basitarsus.

Abdomen: Light brownish with golden reflections on the dorsum, surface smooth, longer than thorax, eighth tergite as shown in Fig. 11; subgenital plate (Fig. 12) with anterior margin concave in the middle, central notch of its posterior margin with laterally directed ridges; first valvifers (Fig. 13) semicircular with articular knobs prominent; second valvifers long (Fig. 13) dorsal margin slightly thickened; third valvulae (Fig. 13) moderate size, movably articulated with second valvifers; outer plates of ovipositor (Fig. 13) with a ridge along basal half of dorsal margin and another oblique ridge starting at the base of dorsal margin and running obliquely upto middle of plate; ovipositor slightly exerted.

Length of female: 1.15 mm.

Male:

Not known.

Holotype: ♀ India, U.P., Garhwal Hills—Joshimath (2895 m), ex. *Tropicomyza atomella* (Malloch) Diptera: Agromyzidae on *Capsicum annum* L. (M. A. Khan), Hym. Eulo. Typ. Nr. 1001.

Paratype: 1 ♀, same data as holotype, Hym. ulo. Typ. Nr. 1002.

This species is more closely related to *Tetrastichus oklahoma* (Girault) Burks, but differs from it in the following key characters :

(1) Body black to dark brown with some parts white or light yellow ; scape slightly exceeding level of vertex ; post ocellar and ocellular lines equal in length, first funicle segment one and one-fifth times as long as second ; club one and one-fifth times as long as second segment ; length of malar space five eighths height of compound eye ; scutum bearing one and a partial second two of bristle at each lateral margin ; stigmal vein one fourth as long as marginal vein. *T. oklahoma* (Girault) Burks.

(2) Body yellowish with some brown patches or infuscation, compound eyes and ocelli bright red ; apex of scape much below the level of vertex ; ocello-ocular line slightly shorter than postocellar line ; first and second funicle

segment subequal in length ; club longer than preceding two funicle segments combined ; malar space almost one half of the height of compound eyes ; scutum with a row of bristle at each lateral margin ; stigmal vein less than one third as long as marginal vein.....
.....*T. atomelli* sp. nov.

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REFERENCE

BURKS, B. D. (1943) : The north American parasitic wasps of the Genus *Tetrastichus*—A contribution to Biological control of insect pests. *Proc. U.S. Nat. Mus.* 93 : 505-608.